SECTION G5000

SITE ELECTRICAL UTILITIES SYSTEMS

06/02

PART 1 GENERAL

1.1. SYSTEM DESCRIPTION

Provide a complete exterior power and communication distribution systems as required by this section.

1.2. SYSTEM REQUIREMENTS

a. The electrical system design shall be designed after a thorough site investigation and meetings with [Public Works Office/Department] [Facilities Maintenance Department (FMD)], Resident Officer in Charge of Construction (ROICC) and end users. Arrange systems logically for easy maintenance. Specify extremely durable components for a quality, low-maintenance installation.

b. Electrical site utilities are considered complete when the facility is connected to and operates from the primary electric distribution system and the base’s telephone and CATV systems, as required by the Request for Proposals.

c. Connect to the primary lines of the existing base electrical distribution system as indicated on the RFP drawings.

d. Repair or replace portions of existing work which are encountered on site and altered during construction of this project to match existing or adjoining work. At the completion of this project, existing work shall be in a condition equal to or better than that which existed before new work started.

e. Existing utilities shall be relocated as required to avoid their location under new facility. Site utilities shall be underground (unless otherwise noted). New utility lines shall be located in accessible areas for maintenance purposes and outside of any area indicated for future construction. They shall be aligned with the roadway system and designed in accordance with Base standards.

f. Electrical systems shall comply with SWDIV “Technical Guidance For Site Electrical Utilities Systems ”, which be viewed at the following internet website:

SWDIV Site Electrical Utilities Systems Technical Guide

g. Adhere to the design guide preference where applicable and as modified by this document.

1.3. CRITERIA

NAVFAC criteria can be found on NAVFAC's Engineering Innovation and Criteria Office Internet site. The address is:

http://criteria.navfac.navy.mil

NAVFAC guide specifications (UFGS) can be located at:

http://www.ccb.org/ufgs/ufgs.htm

1.4. COMPLIANCE VERIFICATION

Compliance with the requirements will be determined during progress presentations made by the Design-Build Contractor's Architect/Engineer of Record and by field inspection. See Document 00911, "Project Kick-off and Design Completion", for presentation requirements. See Section 01330, "Submittal Procedures", for submittal requirements.

Verification of satisfactory system performance shall be via Performance Verification Testing, as detailed in this section of the RFP.

1.5. DESIGN SUBMITTALS

1.5.1. Design Analyses and Drawings

a. Provide an impedance diagram with calculated fault values and impedance values. Refer to IEEE Std. 399-1980.

b. Provide single-line diagram (not riser) showing size of primary feeders, rating of loadbreak elbows, dead front elbow type arrester, bayonet oil expulsion fuse, current limiting fuse in tank, current transformer (do not use potential transformer), KWH meter, transformer rating/primary and secondary voltages/connections, generators, transfer switches, secondary feeder, description of loads served, etc.

c. Provide locations of site lighting poles with pertinent information such as mounting, type luminaire, wattage, ballast, voltage, wiring, and conduit. Submit computerized horizontal illumination levels at ground level taken every 3 m (10 feet), including average maintained [lux][fc] level and maximum and minimum ratio.

d. Provide voltage drop calculations for feeders length over 46 m [150 feet].

e. Provide an overall electrical and communication utility plans showing all electrical system circuits.

f. Provide sag and tension calculations associated with the overhead distribution design.

1.5.2. Design Specifications

a. Submit manufacturer's data sheets per Document 00911, "Project Kickoff and Design Completion" for all items if available. If manufacturer's data

is unavailable, submit prescriptive construction specifications per Document 00911 to specify the quality, characteristics, performance factors, efficiency, installation procedures, and testing and certification requirements.

b. Provide the following sections using NAVFAC (UFGS) guide specifications. Edit only the bracketed portions.

UFGS-16272N, “Three-Phase Padmounted Transformers”

UFGS-16341N, “Padmounted SF6 Insulated Interrupter Switches”

c. SD-07 Certificates

Year 2000 (Y2K) Compliance Warranty

For each product, component, and system specified in this section as a "computer controlled facility component," provide a statement of Y2K compliance warranty for the specific equipment. If the specific listed equipments must perform as a system to exchange date and time data, then that warranty shall apply to those specific equipments as a system.

1.6. CONSTRUCTION SUBMITTALS

See Section 01330, “Submittal Procedures”, for submittal escriptions and requirements. The following items shall be submitted to the Contracting Officer for acceptance.

SD-02 Shop Drawings

Transformers

SD-03 Product Data

Transformers

Padmounted Medium Voltage SF6 switch

Padmounted Sectionalizing Termination cabinet

Light fixtures

Generators

[Others as deemed necessary.]

SD-06 Test Reports

Submit electrical test plan that conforms to the latest NETA Acceptance Testing Specifications for all electrical systems.

Submit a field test report to the Contracting Officer for approval showing field test results verifying all systems conform to your specification and operates as intended under normal and abnormal conditions utilizing primary current injection. As a minimum the field test report shall include the following: description of equipment tested, description of test, test data (see NETA ATS), analysis of data, and recommendations.

SD-07 Certificates

Cable splicer qualifications

SD-09 Manufacturer’s Field Reports

Y2K Demonstration

For each product, component, and system specified in this section as a "computer controlled facility component," provide a field test to demonstrate Y2K compliance.

1.7. QUALITY ASSURANCE

Comply with UFGS 16302N, Underground Transmission and Distribution paragraph 1.5 Quality Assurance.

PART 2 - SYSTEM COMPONENTS

2.1. ELECTRICAL POWER DISTRIBUTION (G5010)

Coordinate with station’s Public Works Department for connection of new medium voltage circuits to existing distribution system.

[2.1.1. Substations

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

[2.1.2. Pad-Mounted transformer

1. Provide pad-mounted transformer with the following additional features/characteristics:

a. [Windings shall be copper.]

b. [Metering and Utility Control System (UCS) in accordance with Base standards.]]

[2.1.3. Pad-Mounted Medium Voltage SF-6 Switch

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

[2.1.4. Pad-Mounted Sectionalizing Termination Cabinet

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

[2.1.5. Overhead Power Distribution

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]

[2.1.6. Underground Power Distribution

[a. All primary and secondary feeders shall be underground. No overhead circuits are allowed.]

[b. Manholes shall have an electrical section not less than [__] feet in depth, by [__] feet in length, by [__] feet in width, with an access opening to the surface above (outer air) of not less than [__] feet in diameter.]]

[2.1.7. Duct Bank

[Secondary underground circuits shall be concrete encased. Top of encasement shall be a minimum of [18in][457mm] below grade except that under roads or pavement it shall be [24in][610mm].]]

[2.1.8. Grounding

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

2.2. SITE LIGHTING (G5020)

[2.2.1. Fixtures and Transformer

[a. Area and parking area lighting shall use [__] watt [high pressure sodium][low pressure sodium][metal halide] lamps with cutoff optics on [__] meter poles.]

[b. For roadway lighting provide [__] watt [high pressure sodium] [low pressure sodium] lamps in [“cobra head”][__] fixtures with cutoff optics on [__] meter poles.]

[c. Provide pedestrian scale lighting fixtures for walkways.]]

[2.2.2 Poles

[a. In areas where light bases are subject to damage from vehicle traffic, the bases shall be protected with [__] colored concrete collars [30 in][762mm] above finish grade and [__ in][__ mm] in diameter.]]

[2.2.3 Wiring Conduits and Duct Bank

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

[2.2.4 Controls

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

[2.2.5 Grounding

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]

2.3. SITE COMMUNICATIONS AND SECURITY (G5030)

a. Coordinate with the Base Communication Officer and service provider companies for connection requirements.

[b. All underground conduits shall be PVC and concrete encased.]

[2.3.1. Voice

[Address who splices into base system.]]

[2.3.2. Data

[Address who splices into base system.]]

[2.3.3. Cable Television

[Address who splices into the Base system.]]

[2.3.4 Site Security and alarm system

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

2.4. Other Site Electrical Utilities (G5040)

[Insert Text Description only if not described in the Electrical Systems Technical Guide.]]

PART 3

Not Used.

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